



Technical Memorandum

PROJECT**HIGHGATE
SCHOOL
MALLINSON
SPORTS CENTRE****PROJECT REF****PP2193**

Subject	Entrance to Mill Race	Revision
Author	JRY	A
Reviewed		Date
Authorised	JRY	24/04/26

Introduction

The objective of this technical note is to address the matters raised in Haycock Environmental Consultant's report¹ of the 18 February 2026. The report raises question concerning four aspects of the Flood Risk Assessment (FRA) prepared for the Highgate School, Mallinson Sports Centre. These questions are addressed in this Technical Memorandum. Issues relating to the Basement Impact assessment are not addressed and are covered as required by Pringer James.

Rainfall data

The rainfall model used for the modelling used in the FRA is the Flood Estimation Handbook (FEH), Depth Duration Frequency (DDF) rainfall model. The model was developed by the Centre for Ecology and Hydrology in conjunction with the Environment Agency.

¹ [Highgate School - MSC - Phase 2a and 2b - HGY/2023/0338 - Review of BIA, FRA, SUDs and implications of the proposed development for the adjoining owners in Broadlands Road](#)

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The FEH DDF model is recommended for use by the Environment Agency and accepted for use by Local Authorities in England, Wales and Scotland for the evaluation and design of Sustainable Drainage Solutions. The FEH DDF model is a regional, spatially distributed model which differentiates between areas throughout the UK. The model is specifically designed and calibrated for evaluating extreme rainfall events including the 1% AEP (1 in 100 year rainfall) event employed for the Mallinson Sports Centre FRA.

Fifteen-minute quality assured data local rainfall data is available on the government's Hydrology Data Explorer². However, the data record is not sufficiently long to undertake a statistical analysis to reliably quantify the Annual Exceedence probability for 1% AEP event which is the design event required by the Technical Guidance to the National Planning Policy Framework³.

Flooding to 15 and 17 Broadlands Road

The hydraulic modelling indicates that there is some surface water ponding in the gardens of 15 and 17 Broadlands Road. However, it should be recognised that, the hydraulic model distributed rainfall across the whole catchment area with flow routes dictated by the topography. Accordingly, ponding can be expected in areas where there are depressions in the terrain such as the above gardens.

Ground levels at these properties are approximately 113.00 m AOD to 114.46 m AOD. The top water level in the retention basin will be 109.74m AOD in the design event approximately 3.26m below the gardens. The modelling for the pre and post - development scenarios confirms that there is no change in the extent and depth of ponding in the gardens as a result off the construction of the Mallinson Sports Centre (see FRA Figures 5.15 to 5.17).

² <https://environment.data.gov.uk/hydrology/explore>

³ <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

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It should also be noted that overtopping of the retention is controlled by a weir / lowered crest which will discharge into the existing stream which runs alongside the MSC and not towards 15 or 17 Broadlands Road.

Accordingly, the ponding is 15 and 17 Broadlands Road is not attributable to the MSC development. However, the existing buildings to the south of the proposed sports hall are presently at risk of flooding but there is a reduction in flood level in some areas in the larger design events. The conclusions note that there is a reduction in flood level downstream of the site in the order of 0.03m to 0.15m.

Sensitivity of Infiltration Parameters

The Haycock report suggests that the hydraulic modelling results are sensitive to the selection of infiltration parameters (hydraulic conductivity) which represent the permeability of the soils. The hydraulic conductivity which represents the permeability of the ground has been based on a regional model for soils. It should also be noted that the model also includes representation of impermeable surfaces such as roads and other hard surfaces where rainfall does not percolate into the underlying soils.

In addition, a sensitivity test has been undertaken and included in the results have been included in the FRA. The sensitivity analysis assumes that there is no infiltration into the underlying soils. This maximises the volume of surface water run-off and therefore flooding. It can be considered as a worst- case scenario.

The Haycock report notes that "flood risk rises with greater runoff volumes". This is entirely as expected but as noted above it is the worst-case scenario. Despite the fact that it is a worst case scenario the run-off volumes are contained within the freeboard of the retention pond with water levels in the worst-case scenario being 0.12m above the case with permeable soils. This is not considered to be a significant rise in water level as alluded to in the Haycock report.

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Retention Pond Infiltration

The Haycock report suggests that infiltration through the soils underlying the retention pond may have an impact on groundwater flooding. The Edenvale Young FRA presents factual information from the site investigation including a review of borehole information. The FRA has not been written to address ground water flooding which a, noted above, is a matter for the Basement Impact Assessment which includes detailed groundwater modelling.

In relation tot eh retention pond section 4.2.6 of the FRA states that:

"As boreholes BH103 and BH104 represent the ground conditions at the attenuation basin then the invert of the attenuation pond would be within the media described as orange brown and light grey mottled silty, sandy to very sandy CLAY with occasional partings of ne sand to orange brown slightly silty, sandy and slightly gravelly CLAY. The borehole log notes that there is no seeping water despite the possibility for cohesionless material within the media."

This statement is to affirm that seepage through the retention pond is unlikely and that the impact on groundwater is therefore de minimus.

Blockage

The risk of blockage to the retention pond will be minimised by a French Drain located in the base of the retention pond. French Drains have a very low risk of blockage by comparison to a piped outfall which would require a trash screen which has the risk of blinding.

Nevertheless, there will be a maintenance schedule which will remove debris from the base of the retention pond.

Drainage Design

Whilst not referred to in the Haycock report it should be noted that the design of the drainage system is commensurate with planning. It is assumed that a condition will be included with the planning permission for the provision of a design details for the Suds features.

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This would include:

- Geometric details of the spillway to the retention pond (level, width etc)
- The specification of materials for the spillway and embankment.
- Details of attenuation tanks and pipework including invert levels.

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